



National Weather Service Modernization Success Stories

We can improve weather products and services and create more success stories by leveraging the modernization...

The decade-long effort to modernize the technology used by National Weather Service meteorologists to forecast and better understand weather, water and climate has resulted in successes that have helped save lives and protect property. Modernized technology such as the Advanced Weather Interactive Processing System (AWIPS), Doppler radar network, sophisticated weather satellites and surface observation systems have improved lead times for severe weather warnings. A modernization in motion, the NWS plans more technological upgrades and enhancements in the 21st century. Below is a glimpse of some modernization successes:

HURRICANE FLOYD, September 1999 -- The National Weather Service produced its most accurate forecast track ever for Hurricane Floyd. During the life of this storm, 25 forecasts were issued, with an average track error of 104 miles. The average track error for previous storms had been 240 miles. Scientists fed satellite data and data collected from hurricane-hunting aircraft into computer models that analyzed the storm. The forecasters compared results from several models and used them as guidance when issuing the forecasts. The National Weather Service predicted that Floyd would turn to the north and not hit Florida and that's exactly what happened.

* * *

GRAND CANYON, July 14-15, 1999 -- Forecasters using the advanced Doppler radar detected nearly three inches of rain falling over the Grand Canyon, which triggered flash flooding along Bright Angel Creek and its water ways. The modernized technology enabled forecasters to issue flash flood warnings in advance that helped park officials close hiking trails and keep visitors away from mud slides preventing the loss of life.

* * *

NORMAN, Okla., May 3, 1999 -- Ahead of an outbreak of deadly, powerful tornadoes in Oklahoma and Kansas, forecasters at the Norman Forecast Office generated warning lead times from 13 to 65 minutes thanks to AWIPS technology, which combined radar, satellite and other crucial information to track this fast-moving storm system. At one point, the forecast office used four of its six AWIPS workstations to compose severe weather statements and tornado warnings. Forecasters also were able to divide warning responsibility by geographic area, improving the efficiency of the warnings during this event.

* * *

HAYSVILLE, Kan., May 3, 1999 -- During the tornado outbreak in Oklahoma and Kansas, a supervisor at Norland Plastics in Haysville saved more than 100 lives by responding to official National Weather Service warnings heard on the plant's NOAA Weather Radio. Shortly after instructing employees to move to the basement, a twister devastated the entire building. No one was hurt and Norland employees credit the warnings.

BEEBE, Ark., January 21, 1999 -- A girl's basketball game in the Beebe High School gymnasium was suddenly halted at half-time after the town's school superintendent heard a tornado warning issued by the National Weather Service. NOAA Weather Radio's real-time updates indicated the tornado was moving in the direction of the school. Thirty minutes after the game was called, an F-3 tornado nearly leveled the gym. No one was injured because the facility was vacant.

* * *

CHICAGO/DES MOINES, January 5, 1999 -- Forecasters used state-of-the art technology, developed during the National Weather Service's modernization, to issue an advanced, accurate prediction of a major winter storm system that dumped nearly two feet of snow from St. Louis to Green Bay. Sophisticated computer models and AWIPS helped meteorologists issue forecasts that drew wide praise from media for their precision and timeliness.

* * *

CENTRAL PENNSYLVANIA, May 31 and June 2, 1998 -- Severe thunderstorms that covered 33 counties in Central Pennsylvania touched off a series of F-2 and F-3 tornadoes and meteorologists used AWIPS to issue warnings with average lead times between 22 and 35 minutes. Emergency managers, who heard official National Weather Service warnings broadcast on NOAA Weather Radio and the Emergency Alert System, praised the advance notice the agency provided.

* * *

ZION NATIONAL PARK, Utah, July 27, 1998 -- National Weather Service forecasters in Salt Lake City used AWIPS to pinpoint which drainage spots heavy rains would flood at Zion National Park in Utah, saving the lives of at least several hikers along the Virgin River. Widespread thunder-storms swelled the river sevenfold and brought the potential for flash floods. Forecasters issued a flash flood warning and prompted park rangers to persuade hikers to vacate the area. Though two hikers who knew of the flood warning were killed, park rangers concede the death toll could have been higher had they not received the timely warning.

* * *

CAMP SPRINGS, Md., June 17, 1997 -- Six months before the 1997-1998 El Nino, called the "Event of the Century," NOAA's Climate Prediction Center issued its forecast. Advanced

computerized forecast models and other modernized technology enabled forecasters for the first time to predict the arrival of El Nino. "The highly accurate long-range predictions issued by the [CPC]...led California to conduct major mitigation efforts...[that] led to a reduction in losses of about \$1 billion," said Stanley A. Changon, quoted in the Bulletin of the American Meteorological Society.

CINCINNATI, March 25, 1997 -- National Weather Service flood warnings saved opening day for the Cincinnati Reds by giving the management at Cinergy Field enough time to close flood gates and activate pumps to keep out the Ohio River. Ken Haydu, meteorologist-in-charge at the Wilmington, Ohio Forecast Office, credited the agency's modernization -- namely the advanced Doppler radar and weather satellites -- with providing the information needed to forecast the worst flooding in the area since 1964. The forecast saved opening day and the stadium's new \$2 million astroturf installation.

* * *

LYONS, Pa., May 31, 1998 -- Doppler radar picked up strong, fierce winds associated with the thunderstorm hitting this small town in Berks County, prompting meteorologists at the Mt. Holly, N.J. Forecast Office to issue a tornado warning. Twenty minutes later, a tornado touched down and destroyed half the town. No deaths or serious injuries were reported. Post-storm surveys revealed residents took action based on the early warnings from the National Weather Service.

* * *

HONOLULU, July 16, 1994 -- Forecasters at the Central Pacific Hurricane Center used improved numerical models and modernized technology to help accurately predict the intensity and track of Hurricane Emilia, a potentially deadly Category 5 storm in the waters of the Pacific. The hurricane would eventually weaken and skirt farther away from land. Through its forecasts, and by not issuing a watch or warning that was not necessary, the National Weather Service helped save the state of Hawaii and its citizens millions of dollars in evacuation costs.

* * *

LEXINGTON, S.C. -- August 16, 1994 -- The remnants of Tropical Storm Beryl unleashed a barrage of tornadoes in central and northwest South Carolina. In Lexington, an F-3 tornado caused \$37 million in damages and leveled 25 homes and more than 200 businesses. The newly installed Doppler radar at the Columbia Forecast Office helped meteorologists issue warnings with lead times between 16 to 30 minutes. In a letter from the Lexington Baptist Association Disaster Relief, the coordinator praised the National Weather Service by saying: "The only thing our volunteers and the survivors ... can see that kept these tornadoes from claiming countless lives was the advanced knowledge of their approach which your office provided."

#